ICT Specification A
2008 AQA GCSE

Problem 2

By Ram Kanadia
10 SAB

CONTENTS

Introduction

I again have been given the role of Bernie, however I have been given another problem to find a solution to. I need to create a system for Barry, who is currently responsible for marketing and he wants some help with working out costs for his latest idea of creating DVDs showing the different attractions at the park.

There are going to be two different types of publicity packs, one being the standard pack and the other being the ticket agent pack.

I will need to create two hand drawn designs before starting to create the actual system. This will help me to use the best and most simple layout while creating the formulas that I will need to use. Consequently I will need to evaluate my designs, and then go to choose the correct software to use, after my choice I can begin to produce the system.

Design Section

In this section of the tasks (problem 2) I have been asked to produce a system which will explain and work out the details of selling such items as DVDs in packages. There are two different types of packages which I will have to find out the cost of producing. The first is the Standard Pack and the other is the Ticket Agent Pack. However in order to find out the cost of producing such items I will have to consider the following;

- The appropriate software which will allow all operations and functions needed in the course.
- Planning the solution which means producing design plans that will be followed by the implementation showing how the system was built.

For this task there is a wide range of software I can use. Initially I was thinking that the only choice I have is to use the programs provided by Microsoft Office 2007. But after looking deeply in to alternatives I found two other programs. However I had to asses these before making my final choice. So like in Problem one I created a table which would show me the advantage and disadvantages of each. With the use of this I could weight out the advantages with disadvantages. The three software I could choose from were the choices I had were Microsoft Excel, Microsoft Works Spreadsheet, and finally Ashampoo Office 2006 (spreadsheet).

The use of Microsoft Offices' Excel was one of the first ideas; the reason for this was simply that; I had experience with the package, while knowing that the main features I needed were available. The application can be used in a wide variety of contexts.

Ashampoo office 2005

Advantages	**Disadvantages**
Ease of updating information, if data changes it is just a matter of deleting the old and replacing it with the new.	The school system doesn't actually contain the software so it would be difficult to import work from home to school and vice versa.
Word-search capability, which means if a specific word or numeric data needed replacing or modifying, it could be done efficiently.	Initial investment of time to migrate content
Portable (it does not take up as much space on removable drives as equivalent software)	Only the 2006 version is available to me which does not contain all the features and functions I need to use.
Aesthetic enhancement of content	Can be confusing to use.
The ability to present complex concepts in a concrete manner, as there are three sheets which I can use to split the data up into specific sections.	There are limited resources I can use to recover data in case of loss.
	Intricate to use (all functions may not be known)

MS Excel

My second choice was MS Excel, it has numerous advantages and disadvantages, my main reason for considering this programme, was the fact that it was able to produce advanced calculations on numerous pages while still being able to create accurate answers on specific objects to other pages. Below is also a table as the one formed previously.

Advantages	**Disadvantages**
It is able to perform complex calculations automatically with uses of formulas.	Installation for this software is slow as many options are available on offer, and it occupies a large amount of memory.
The program makes it easy to use.	The applications functions are difficult to find unless fluent with the program.
Designed for this very use as it can perform functions unavailable in the other software's evaluated in this section. It also has a wide range of help offline and online, which means loss of data will not be a problem as it can be recovered efficiently.	
Available both in school and outside which means the task can be completed more efficiently rather depending on one computer which holds the application.	

Microsoft Works Spreadsheet

My final choice of software is Microsoft Works Spreadsheet, it may not be the most obvious choice but it has all the capabilities, as it uses a similar template to MS Excel. It lets me use it without becoming too complex; however there are not all the functions which I may have to use in order to retrieve accurate results. This was the reason why this software was popular choice. Again, like the above I will produce a table to show the contrast of advantages and disadvantages as well as using it for a comparison between all programs.

Advantages	**Disadvantages**
It is capable of producing the interactive presentation.	It was not initially designed for the use of interactive presentations.
It can import and edit specific images and text without the help of other software packages such as Microsoft Paint to crop an image.	I will have to bookmark the pages before putting hyperlinks in place.
I am able to hyperlink images and identifiable words in order to follow users onto other pages.	It is a lengthier process than creating the same model on Power Point.
I can view pages as web pages to test the model, as well as view the actual presentation in partial or full working order.	
I am aided with automated Spell Check, which will underline incorrect spelling or structure and is not available on Power Point, unless selecting the option.	
There are more much needed toolbars available which simplifies the extensive task.	

Conclusion of software choice

After comparing the tables, it is obvious that my first choice has not got the sufficient advantages and tools available to complete the task in hand; this means there is now only a choice between MS Excel and MS Works Spreadsheet. In my opinion I think that MS Excel is competent to complete the task more accurately; this is because the program allows me to use functions unavailable in MS Works Spreadsheet.

Also that program, as mentioned before is mainly used for meetings to let members view ideas without using the model as an interactive presentation. This was the main deciding point to why I chose to use Microsoft Excel as the program to generate a system to show the costs of producing specific packs which will be sold to individuals and ticket agents.

Microsoft Excel is extremely popular which emphasises the quality and usefulness of the program itself. Since I have used it previously I know how to navigate my self around the application which insures that the task will be completely more efficiently.

Evaluation of Hand Drawn Plan 1

Sheet 1 of 2.

In the subsequent text I will be evaluating my hand drawn plan 1. I will be explaining formulas and formula references and text. I will also be justifying my choices for font colours, effects such as bold, italic and underline, plus the use of special features for instance the '$' sign.

Layout; I have chosen to split the data up into two sections and so I can paste it into the two different sheets giving a clearer layout. Sheet 1 consists of the actual table showing initial costs. The process of calculations will be shown on Sheet 2. Then final totals can be shown on the first sheet giving clarity to the system. Also this makes the data seem less overwhelming.

Formulas; Only simple formulas are used on the first sheet, these are ones such as '=C22*C24'. This means that there is less chance of there being a fault with the calculations on this page and can be narrowed down to the cause if there was to be one. I have only used the 'SUM' function when calculating totals for the tables specified in the booklet itself. On these formulas I do not have to use the $ sign as all references differentiate.

Text types; I only want to use one type of font to keep the layout less complex. I will be using 'Times new roman' to give it simplicity and clarity. Also I will be using different colours for the totals to put emphasis on the different packs.

Evaluation of Hand Drawn Plan 1

Sheet 2 of 2.

As above I will be evaluating the hand drawn plan 1, however unlike the above I will be evaluating the second sheet ensuring the specifications are clear for the task in hand. Similarly I will be explaining formulas and formula references and text types/styles. I will also be justifying my choices for font colours, effects such as bold, italic and underline, plus the use of special operation, for instance the references to different sheets (='Sheet 1'! followed by the cell reference.).

Layout; on this sheet I am going to show raw calculations while still trying to keep a simple look. I have kept the upper half for the standard pack and the lower half for the ticket agent pack calculations. I will resize the columns so that the text and numeric data fits into the cell. I will want to keep the data clear and allow for the data to be adapted just in case the costs change.

Formulas; I will be using more complex formulas in this section as I will need specific cell data from the previous sheet. Also since I have renamed the sheet it self the reference needs to include the new name for the sheet. However despite the multifaceted formulas the way it is laid out means that the final appearance makes it easier to understand.

Text; Again like the pervious sheet I want to use a simple font and colours to make it more comfortable to the eye and so it is easier to change data just in case of modification of costs.

Evaluation of Hand Drawn Plan 2

Page 1 of 2.

As I did in the pervious evaluation of hand drawn design 1 I will have to analyze the content as well as the overall appearance keeping in mind the cell references and formulas which are vital when working out the costs as they have to be extremely accurate. I will also justify all effects put on text and backgrounds.

Layout; Rather than splitting the data up into two sections I will just keep all the data on one sheet. Also I will make extremely sure than the data has superior clarity in terms of appearance.

Formulas; There is only four formulas used on this page. Only simple formulas are used in this section of calculations. These are ones such as '=SUM(D14:D16). I have only used the 'SUM' function when calculating totals for the tables specified in the booklet itself. This function makes it easier to calculate totals than click on each cell and press the + sign constantly as that is very time consuming.

Text; Again like the above sheets I want to use a simple font and colours to make it more comfortable to the eye and so it is easier to change data just in case of modification of costs.

Evaluation of Hand Drawn Plan 2

Page 2 of 2.

As I did in the pervious evaluation of hand drawn design 1 I will have to analyze the content as well as the overall appearance keeping in mind the cell references and formulas which are vital when working out the costs as they have to be extremely accurate. I will also justify all effects put on text and backgrounds.

Layout; I will ensure that the data has superior clarity in terms of appearance. There is not a table showing the final costs, instead there is specific cells beside calculations showing costs and amounts needed.

Formulas; The formulas are basic on this page, mainly because there are not two separate sheets. This means that I do not have to include a reference for that specific sheet which the data is held on.

Text; Again like the above sheets I want to use a simple font and colours to make it more comfortable to the eye and so it is easier to change data just in case of modification of costs.

Testing plan

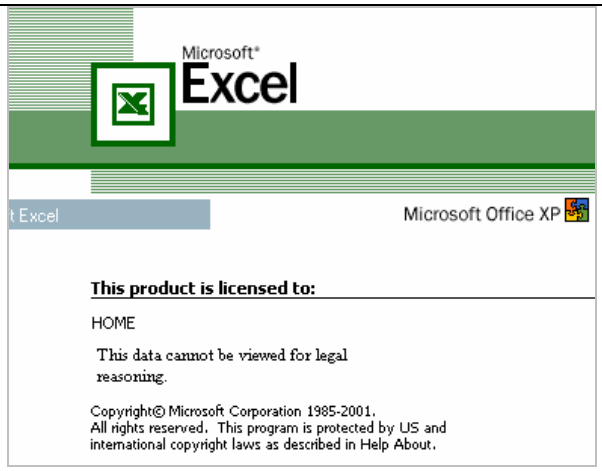
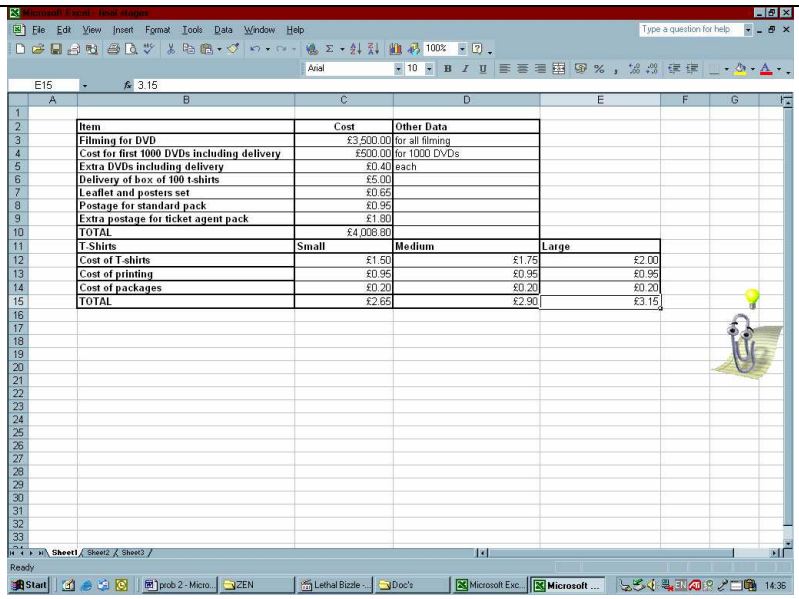
In this section I will be creating a table which I will use in the near future to test if specific functions worked or not.

Test no	Purpose of test	Testing data	Expected result	Actual Result
1	To see if all formulas are in working order.		Must show all costs	
2	See if the validation rule works.		Must not allow less than 1000 packs	
3	Must show that the validation rule is not faulty and allows for a larger amount to be entered.		Must be able to enter total number of packs	
4	To see if the formula works along with the specified data.		Must show the cost of making and sending out one standard pack	
5	There should be no rule blocking a custom amount of packs.		Must be able to enter total amount of ticket agent packs	
6	The formula allows for the data to be calculated leaving accurate results.		Must show total of making and sending the packs	
7	Show all formulas work in order.		Must produce correct answers	
8	To see if the cell has been formatted correctly.		Round up the number of people paying for the full entry fee	
19	To see if correct results are outputted.		Must show amount of people needed to cover costs	

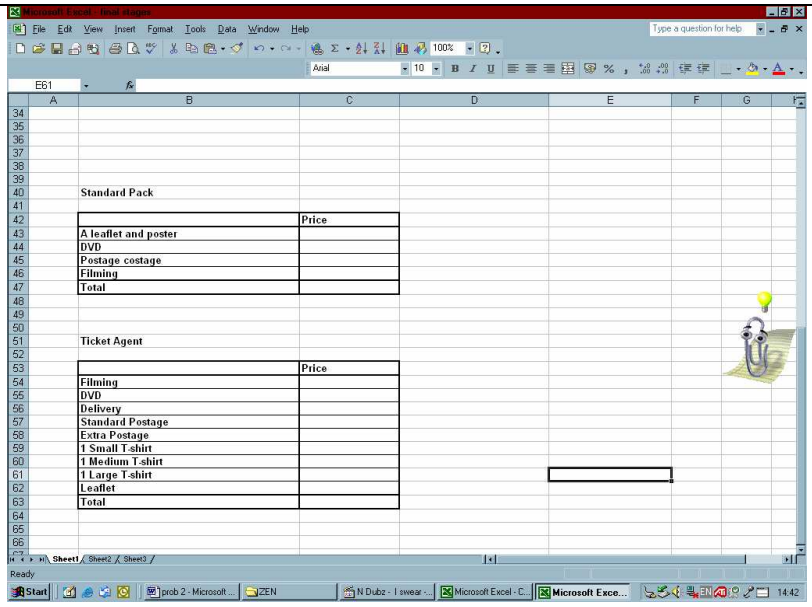
Currently I cannot fill in columns, this is if the function worked or not and testing data. I can only fill this in once I have created the system. I will need to test numerous things as well as continue explaining each process with a screenshot and a short description of what I did in order to test the model.

Implementation

The following will show the steps I took in order to produce the system. This includes using screen shots to represent processes.

No.	Screen shot	Explanation
1		I had chosen MS Excel as my final choice, so the first thing I could do was open it up and save the sheets in 'My Documents'. This would help me save my work more efficiently later and prevent loss of data.
2		The first task I had to complete was to copy up the tables and grids provided in the booklet. I positioned it in the way shown in the plan. However I added minor improving elements.

3



Standard Pack

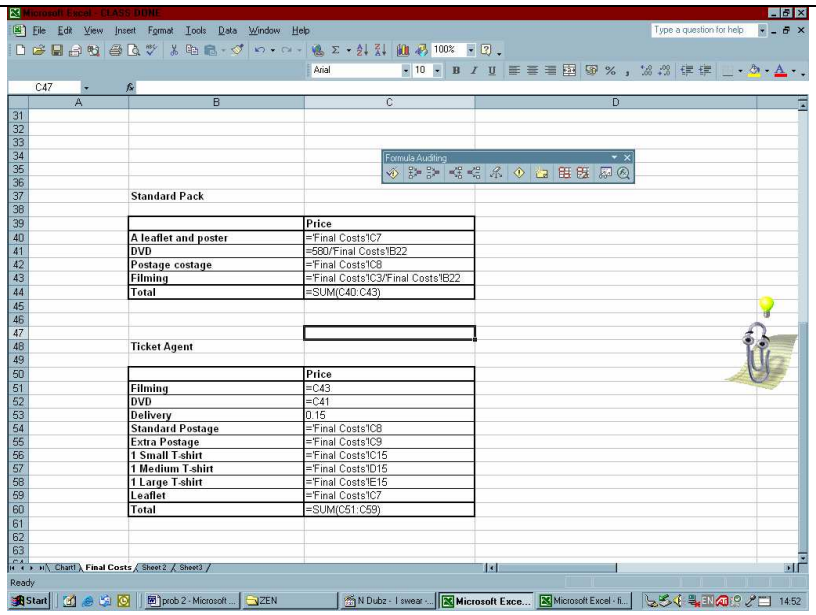
	Price
A leaflet and poster	
DVD	
Postage costage	
Filming	
Total	

Ticket Agent

	Price
Filming	
DVD	
Delivery	
Standard Postage	
Extra Postage	
1 Small T-shirt	
1 Medium T-shirt	
1 Large T-shirt	
Leaflet	
Total	

I thought the easiest way to get accurate results was to complete the table with the items included in the packs. I changed the layout so I use the box of totals but use the calculations lower down on the same page.

4



Standard Pack

	Price
A leaflet and poster	='Final Costs'!C7
DVD	=580/'Final Costs'!B22
Postage costage	='Final Costs'!C8
Filming	='Final Costs'!C3/'Final Costs'!B22
Total	=SUM(C40:C43)

Ticket Agent

	Price
Filming	=C43
DVD	=C41
Delivery	0.15
Standard Postage	='Final Costs'!C8
Extra Postage	='Final Costs'!C9
1 Small T-shirt	='Final Costs'!C15
1 Medium T-shirt	='Final Costs'!D15
1 Large T-shirt	='Final Costs'!E15
Leaflet	='Final Costs'!C7
Total	=SUM(C51:C59)

The next stage is to enter all the calculations and formulas in to the space left. Since I changed the layout slightly I had to adapt the formulas that were in the plan. The formulas are shown on the left.

5

	A	B	C
39			Price
40		A leaflet and poster	='Final Costs'!C7
41		DVD	=580/'Final Costs'!B22
42		Postage costage	='Final Costs'!C8
43		Filming	='Final Costs'!C3/'Final Costs'!B22
44		Total	=SUM(C40:C43)
45			
46			
47			
48		Ticket Agent	
49			
50			Price
51		Filming	=C43
52		DVD	=C41
53		Delivery	0.15
54		Standard Postage	='Final Costs'!C8
55		Extra Postage	='Final Costs'!C9
56		1 Small T-shirt	='Final Costs'!C15
57		1 Medium T-shirt	='Final Costs'!D15
58		1 Large T-shirt	='Final Costs'!E15
59		Leaflet	='Final Costs'!C7

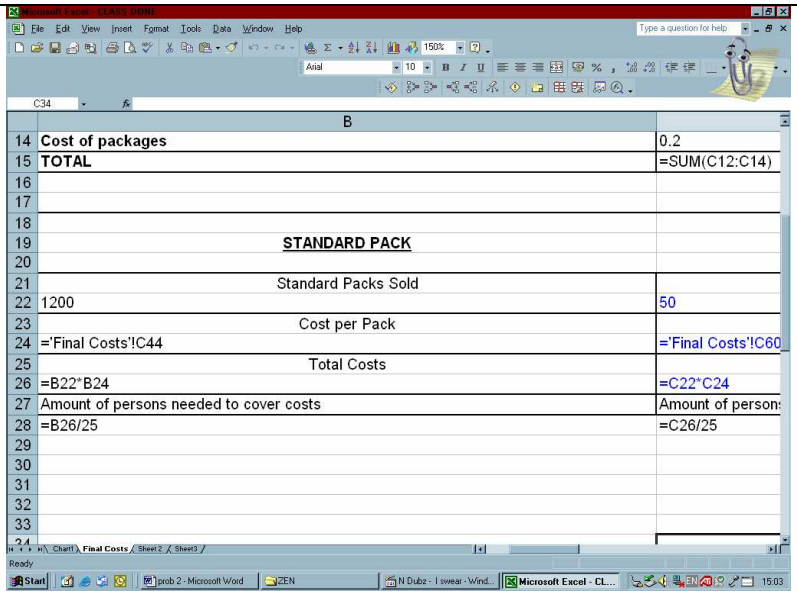
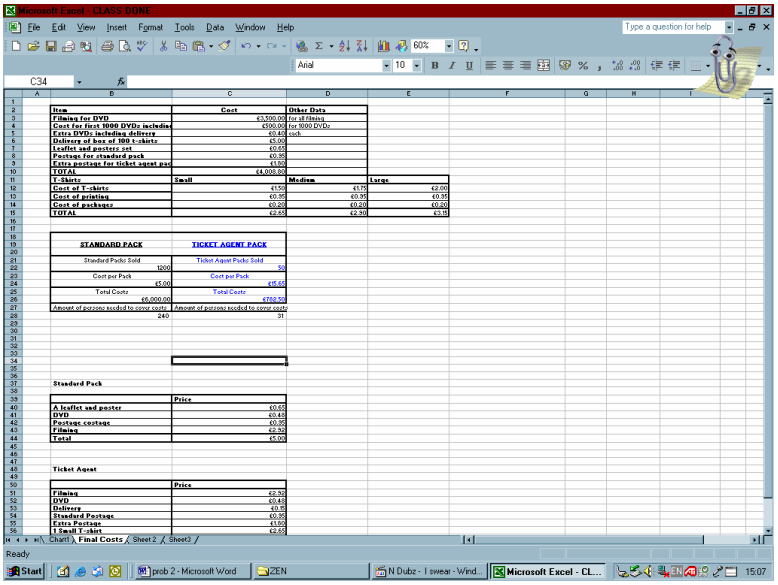
6

	A	B	C
14		Cost of packages	£0.20
15		TOTAL	£2.65
16			
17			
18			
19		STANDARD PACK	TICKET AGENT PACK
20			
21		Standard Packs Sold	Ticket Agent Packs Sold
22		1200	50
23		Cost per Pack	Cost per Pack
24		£5.00	£15.65
25		Total Costs	Total Costs
26		£6,000.00	£782.50
27		Amount of persons needed to cover costs	Amount of persons needed to cover costs
28		240	31
29			
30			
31			
32			
33			
34			

The final stages were to complete this table, in order to find accurate results.

These formulas were more advanced and complex, but since they were on the same page it was stiller more simpler than if the data was split up into two different pages.

As you can see two different colours are used in order to

		emphasise the two different packs.
7		This final slide is showing the final costs formulas. This is the last screen shot before testing it. The finished system is shown in the two screenshots below the one on the left.
8		

	B	
14	Cost of packages	0.2
15	TOTAL	=SUM(C12:C14)
16		
17		
18		
19	STANDARD PACK	
20		
21	Standard Packs Sold	
22	1200	50
23	Cost per Pack	
24	='Final Costs'!C44	='Final Costs'!C60
25	Total Costs	
26	=B22*B24	=C22*C24
27	Amount of persons needed to cover costs	Amount of person
28	=B26/25	=C26/25
29		
30		
31		
32		
33		

9

Item	Cost	Other Data
Filming for DVD	£3,500.00	for all filming
Cost for first 1000 DVDs including	£500.00	for 1000 DVDs
Extra DVDs including delivery	£0.40	each
Delivery of box of 100 t-shirts	£5.00	
Leaflet and posters set	£0.65	
Postage for standard pack	£0.35	
Extra postage for ticket agent pac	£1.80	
TOTAL	£4,008.80	

T-Shirts	Small	Medium	Large
Cost of T-shirts	£1.50	£1.75	£2.0
Cost of printing	£0.35	£0.35	£0.3
Cost of packages	£0.20	£0.20	£0.2
TOTAL	£2.65	£2.30	£3.1

STANDARD PACK	TICKET AGENT PACK
Standard Packs Sold	Ticket Agent Packs Sold
1200	50
Cost per Pack	Cost per Pack
£5.00	£15.65
Total Costs	Total Costs
£6,000.00	£782.50
Amount of persons needed to cover costs	Amount of persons needed to cover costs
240	31

Standard Pack

	Price
A leaflet and poster	£0.65
DVD	£0.48
Postage costage	£0.35
Filming	£2.32
Total	£5.00

Ticket Agent

	Price
Filming	£2.32
DVD	£0.48
Delivery	£0.15
Standard Postage	£0.35
Extra Postage	£1.80
1 Small T-shirt	£2.65

Chart1 / Final Costs / Sheet 2 / Sheet3

Testing

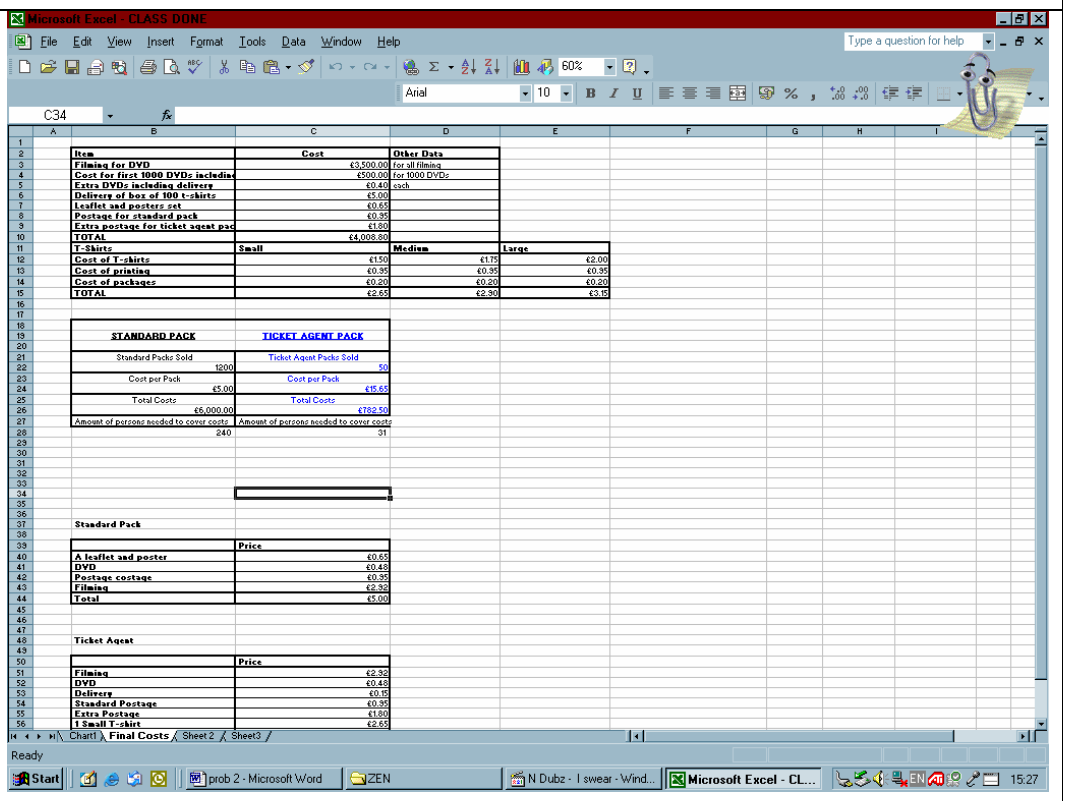
I will now copy and paste the table I produced before and consequently complete the columns I left out at that earlier stage. I will use screenshots, which are linked via the number on the first column.

Test no	Purpose of test	How?	Expected result	Actual Result
1	To see if all formulas are in working order.	Is there any empty space where a formula was put in place? (Failure if YES)	Must show all costs	There are no empty spaces, and so all cells are filled in, in the correct manor.
2	See if the validation rule works.	Can I enter 999? (faulty if YES)	Must not allow less than 1000 packs	I typed in the number 999 and it came up with an error message which I put in place with a validation rule.
3	Must show that the validation rule is not faulty and allows for a larger amount to be entered.	Does the validation rule allow for more than 999 packs? (if NO the validation rule is incorrect)	Must be able to enter total number of packs	You can enter any number above 999, for standard packs, and any number for ticket agent packs.
4	To see if the formula works along with the specified data.	Do the costs equal the correct costs shown in the booklet? (if YES the formulas and costs are correct and I can proceed)	Must show the cost of making and sending out one standard pack	It does show correct costs while showing it in a simple format and layout.
5	There should be no rule blocking a custom amount of packs.	Is there a validation rule put onto ticket agent packs? (If NO it is correct and I can move onto the next step.	Must be able to enter total amount of ticket agent packs	It allows you to enter any custom amount of packs to produce.
6	The formula allows for the data to be calculated	Do the accurate results show? (If NO the formulas	Must show total of making and sending the packs	As the screenshot also shows it does allow for the costs to be seen.

	leaving accurate results.	are wrong and need to be adapted so it is correct)		
7	Show all formulas work in order.	Do they produce correct answers according to data given? (If YES the formulas are correct and I can move on)	Must produce correct answers	As explained in the screenshot space, I have compared results and my results are accurate and correct as the ones provided in the booklet.
8	To see if the cell has been formatted correctly.	Has the cell been formatted correctly? (If yes there is no problem and should come up with correct answers)	Round up the number of people paying for the full entry fee	I have formatted the cell so the total is rounded. Rather than 31.30 coming up only 31 shows, this proves it is correct.
9	To see if correct results are outputted.	The final formula is correct, and all steps have been followed correctly.	Must show amount of people needed to cover costs	This is also correct as shown in the screenshot.

Screenshots

These are the screen shots to match the testing grid above.

Test No.	Screen shots
1	

Item	Cost	Other Data
Filming for DVD	£3,500.00	for all filming
Cost for first 1000 DVDs including	£500.00	for 1000 DVDs
Extra DVDs including delivery	£0.40	each
Delivery of box of 100 t-shirts	£5.00	
Leaflet and posters set	£0.65	
Postage for standard pack	£0.35	
Extra postage for ticket agent pac	£1.80	
TOTAL	£4,008.80	

T-Shirts	Small	Medium	Large
Cost of T-shirts	£1.50	£1.75	£2.00
Cost of printing	£0.35	£0.35	£0.35
Cost of packages	£0.20	£0.20	£0.20
TOTAL	£2.65	£2.30	£3.15

STANDARD PACK	TICKET AGENT PACK
Standard Packs Sold	Ticket Agent Packs Sold
1200	50
Cost per Pack	Cost per Pack
£5.00	£15.65
Total Costs	Total Costs
£6,000.00	£782.50
Amount of persons needed to cover costs	Amount of persons needed to cover costs
240	31

Standard Pack

	Price
A leaflet and poster	£0.65
DVD	£0.48
Postage costage	£0.35
Filming	£2.32
Total	£5.00

Ticket Agent

	Price
Filming	£2.32
DVD	£0.48
Delivery	£0.15
Standard Postage	£0.35
Extra Postage	£1.80
1 Small T-shirt	£2.65

2

Microsoft Excel - CLASS DONE

ERROR
You cannot perform this, please type in a whole number more than or equal to 1000.
Retry Cancel

	A	B	C		
1					
2		Item	Cost	Other Data	
3		Filming for DVD	£3,500.00	for all filming	
4		Cost for first 1000 DVDs including delivery	£500.00	for 1000 DVDs	
5		Extra DVDs including delivery	£0.40	each	
6		Delivery of box of 100 t-shirts	£5.00		
7		Leaflet and posters set	£0.65		
8		Postage for standard pack	£0.95		
9		Extra postage for ticket agent pack	£1.80		
10		TOTAL	£4,008.80		
11		T-Shirts	Small	Medium	Large
12		Cost of T-shirts	£1.50	£1.75	£2.00
13		Cost of printing	£0.95	£0.95	£0.95
14		Cost of packages	£0.20	£0.20	£0.20
15		TOTAL	£2.65	£2.90	£3.15
16					
17					
18					
19		STANDARD PACK	TICKET AGENT PACK		
20					
21		Standard Packs Sold	Ticket Agent Packs Sold		
22		999	50		
23		Cost per Pack	Cost per Pack		
24		£5.68	£16.33		
25		Total Costs	Total Costs		
26		£5,678.40	£816.70		
27		Amount of persons needed to cover costs	Amount of persons needed to cover costs		
28		227	33		
29					
30					
31					
32					
33					

3

Microsoft Excel - CLASS DONE

	A	B	
9		Extra postage for ticket agent pack	
10		TOTAL	
11		T-Shirts	Small
12		Cost of T-shirts	
13		Cost of printing	
14		Cost of packages	
15		TOTAL	
16			
17			
18			
19		STANDARD PACK	TICKET AGEN
20			
21		Standard Packs Sold	Ticket Agent Pa
22		1200	
23		Cost per Pack	Cost per P
24		£5.00	

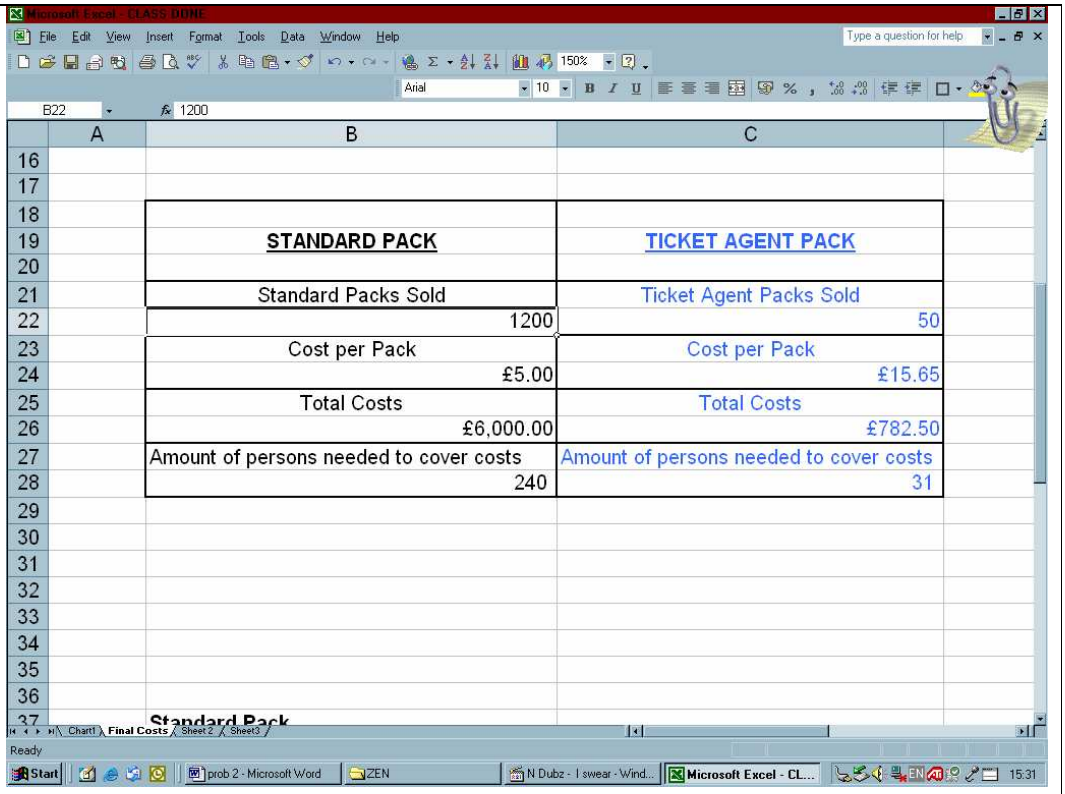
4

	A	B	
16			
17			
18			
19		**STANDARD PACK**	**TICKET AGEN**
20			
21		Standard Packs Sold	Ticket Agent Pa
22		1200	
23		Cost per Pack	Cost per P
24		£5.00	
25		Total Costs	Total Co
26		£6,000.00	
27		Amount of persons needed to cover costs	Amount of persons nee
28		240	
29			
30			
31			

5

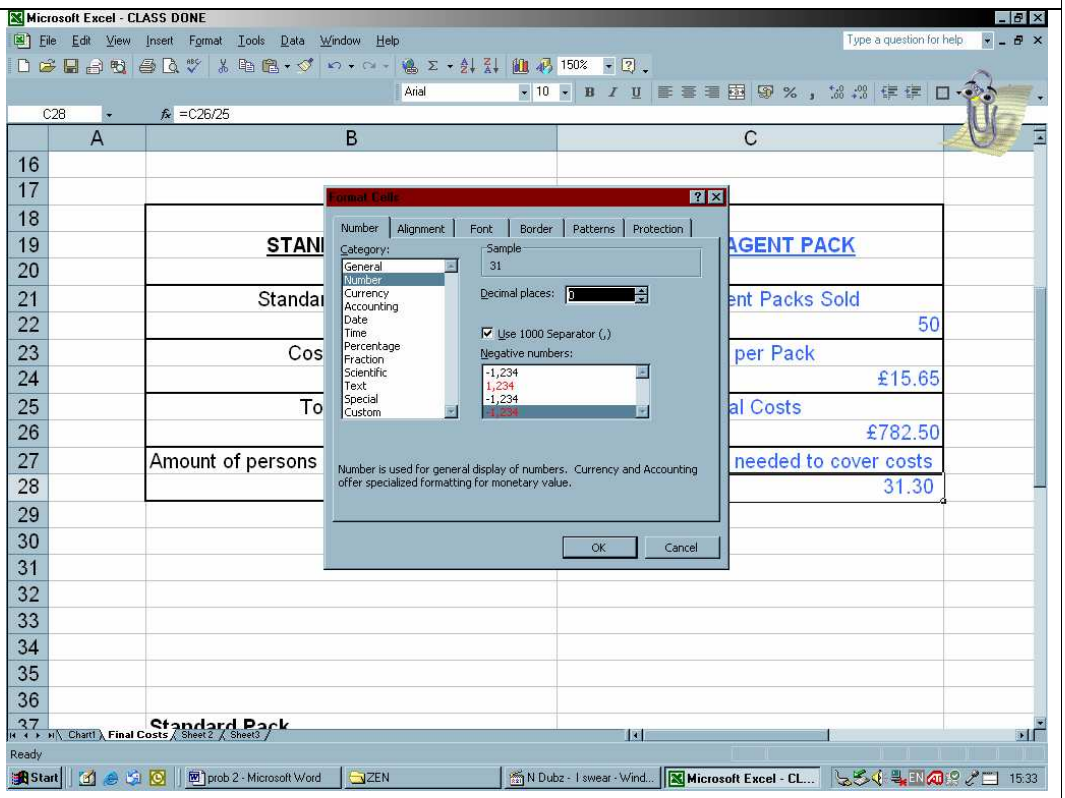
	C	D
16		
17		
18		
19	**TICKET AGENT PACK**	
20		
21	Ticket Agent Packs Sold	
22	50	
23	Cost per Pack	
24	£15.65	
25	Total Costs	
26	£782.50	
27	Amount of persons needed to cover costs	
28	31	
29		
30		
31		

6

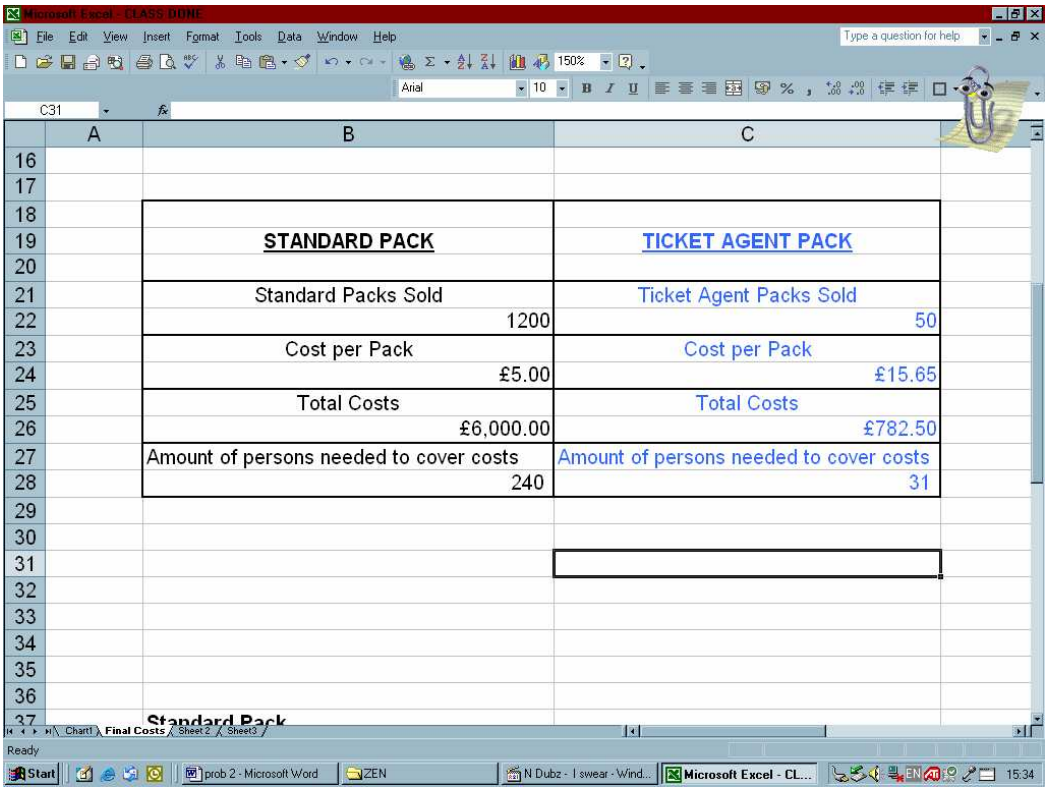


7 I cannot show a screen shot for this, but by comparing data in the table above with the data given in the booklet, I can prove that the answers are correctand that all procedures have been taken to produce correct answers.

8

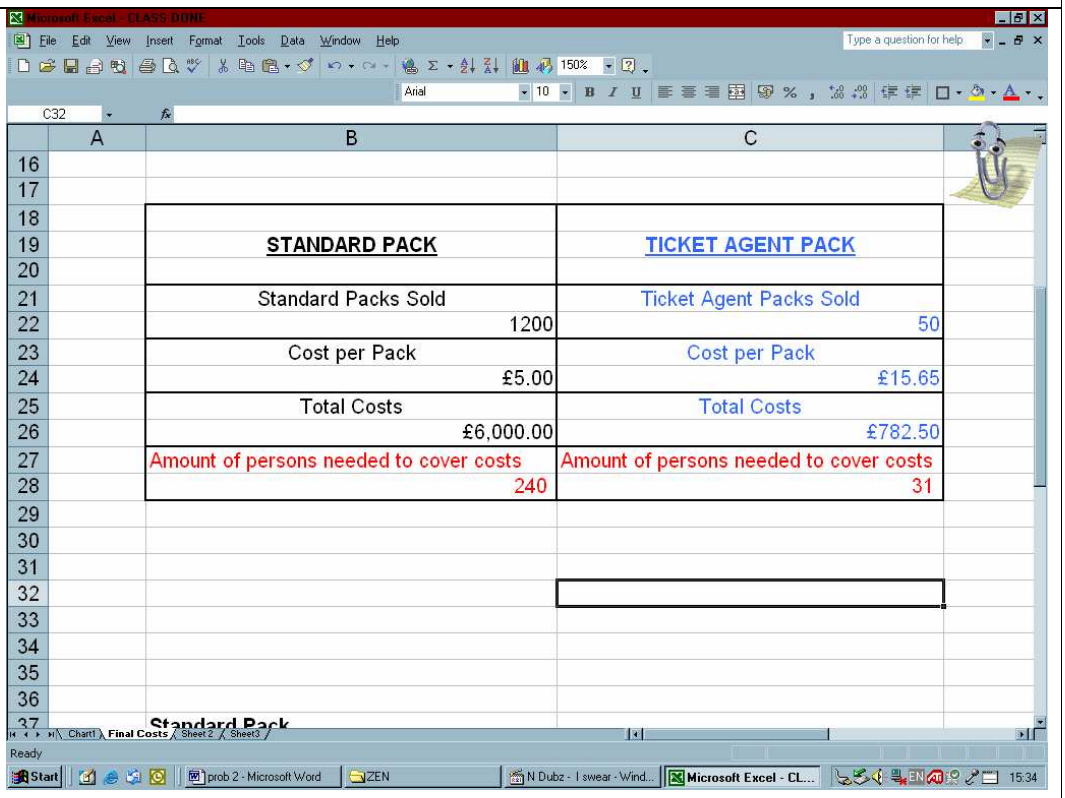


The actual answer would be 31.20, but I have rounded it to the nearest whole number, which shows as 31.



STANDARD PACK	**TICKET AGENT PACK**
Standard Packs Sold	Ticket Agent Packs Sold
1200	50
Cost per Pack	Cost per Pack
£5.00	£15.65
Total Costs	Total Costs
£6,000.00	£782.50
Amount of persons needed to cover costs	Amount of persons needed to cover costs
240	31

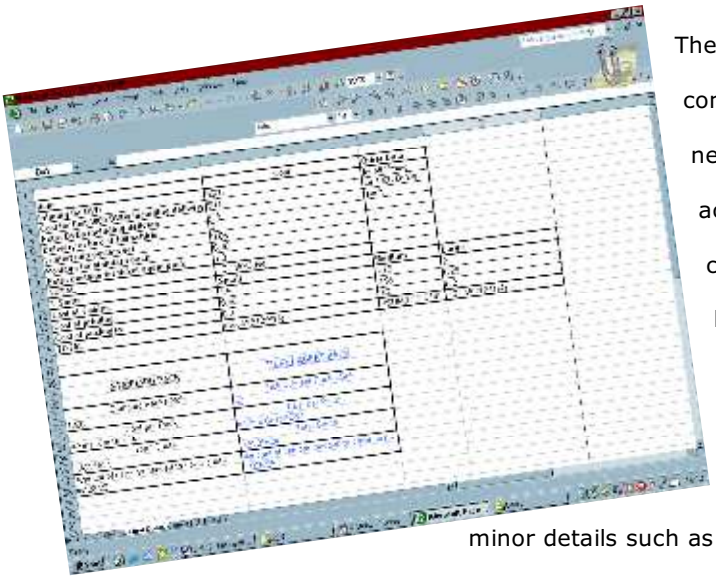
9



STANDARD PACK	**TICKET AGENT PACK**
Standard Packs Sold	Ticket Agent Packs Sold
1200	50
Cost per Pack	Cost per Pack
£5.00	£15.65
Total Costs	Total Costs
£6,000.00	£782.50
Amount of persons needed to cover costs	Amount of persons needed to cover costs
240	31

Evaluation

Now that I have finally completed the task in hand I can go through an overview of the stages. My initial task was to create a system for Barry, who is currently responsible for marketing and he wants some help with working out costs for his latest idea of creating DVDs showing the different attractions at the park.



The job itself demanded concentration as the formulas needed precise references to get accurate results otherwise consequently the output would be negative. However now that I have completed it all and it all fits in I could have improved and refined a few minor details such as the spacing between the tables and grids. On the next page there is a checklist showing what I did correctly and what needed to be refined, also if it was done correctly.

Item	Was it done correctly?	What could be improved?
Must show all costs.	YES	
Validation	YES	I could have refined the message rather than put in a simple error code for the validation rule.
Calculations	YES	I could have made the formulas more accurate by adding in a backup references, I did do do in some cases but did not apply it to all calculations.
Layout	YES (According to plan)	I feel now that I kept the tables to close together and it is not a comfortable to the eye as first indented. Maybe if I had split it up within two sheets then it would have been less clustered.